## SECTION SP - SPECIAL PROJECT REQUIREMENTS

### SP.01 DESCRIPTION

This section of the Specifications covers project requirements unique to this project or not fully covered elsewhere in the Technical Specifications.

### SP.02 STANDARD SPECIFICATIONS

This contract will be constructed and administered under the requirements of the Montana Public Works Standard Specifications (MPWSS), current edition, as amended, and all supplemental documents contained herein The MPWSS are included in their entirety; as applicable, and as modified, amended, supplemented or replaced by the Plans and Technical Specifications.

### SP.03 SUBMITTALS

The Contractor shall submit two (2) copies of the following items to the Owner for review and approval:

1. Shop drawings for structural steel items including placement drawings.
2. Shop drawings for galvanized sheet metal for flume including all metal flashings as shown on the drawings.

### SP.04 MEASUREMENT AND PAYMENT

No items in this project will be measured or paid for on a unit price basis. The lump sum bid prices and payments for the Basic Bid will include all workmanship and materials shown on the drawings or specified herein.

Any estimated quantities shown on the Proposal are approximate and are offered for informational purposes only. Bidders will be responsible to make their own quantity determinations based on the drawings and prepare their lump sum bids for each item accordingly.

### SP.05 REFERENCE DRAWINGS AND TECHNICAL SPECIFICATIONS

1. Drawings No. 1 thru 5 of 5.
2. Technical Specifications.
   Sections 1 thru 9 and Section SP (Special Project Requirements).

End of Section

# SECTION 1 - DEMOLITION AND REMOVALS

## 1.01 DESCRIPTION

This section of the Specifications covers work requirements and details for completing that portion of the project shown on the drawings as described below:

A. Remove and dispose of any existing pedestrian bridge remnants. Actual bridge has already been removed.

B. Remove and dispose of the existing flume structure including all membrane liners, lumber, hardware, and existing concrete foundation elements for its entirety.

## 1.02 GENERAL

All work and disposal methods shall be done in a manner acceptable to the project representatives of the owner. Care shall be taken to prevent damage to stream-banks or the deposition of any bridge materials into Grasshopper Creek. Work shall be done by hand if necessary to separate materials and prevent undue damage to existing vegetation at the sites.

## 1.03 DISPOSAL

All removed demolition materials and other disposables generated by site preparation work shall be removed from the job site and transported by the Contractor to a suitable disposal site. Disposal methods shall meet all local ordinances, State codes, and Federal requirements, as applicable. Any and all fees for use of a disposal site shall be born by the Contractor. Existing HDPE pipe inside the flume shall be returned to Park staff.

## 1.04 SALVAGE

Any items which are deemed worthwhile to salvage may be taken and kept by the Contractor but must be removed and transported to the Contractor's own storage area.

## 1.05 REFERENCE DRAWINGS

Sheets 1 and 3 of 5.

End of Section

## SECTION 2 - EXCAVATION, BACKFILL, AND GRADING

### 2.01 DESCRIPTION

This section covers excavation, shaping, backfill, imported fill, and grading or associated work shown on the drawings or specified herein for the following:

A. Pedestrian bridge foundations and earthen approach ramps.

B. New flume structure including concrete footings, inlet structure and outlet structure and associated incidentals.

### 2.02 EXCAVATION

A. For Concrete Footings

Excavations shall be kept as minimal as practicable to construct the concrete units to the lines and grades shown on the drawings Soils removed for the new construction may be stockpiled and reused for backfilling. Care shall be taken to excavate only to the planned bottom of footing grades on the drawings. Any over excavations will be filled with concrete or compacted gravel.

B. For Wooden Structures On Grade

Excavations shall be done to shape and grade soil surfaces to the required dimensions and elevations to construct the inlet and outlet structures of the flume as shown on the drawings. Final surfaces shall be firm and level across the width of the excavations at right angles to the direction of flow.

### 2.03 BACKFILL AND IMPORTED FILL

A. Backfill for Footings

Backfill will be required to be placed around all sides of the new concrete footings for the bridge and flume. Excavated soils shall be placed evenly around footings on both sides of concrete walk footings and compacted to at least match the density of the original undisturbed soil.

B. IMPORTED FILL

Imported fill material will be required to construct the new ramps on each side of the pedestrian bridge and to fill the existing washout in the area of the flume outlet structure. Fill material for the bridge ramps may be from an on-site borrow source if available or from hauled in road mix gravel. Material for filling the washed out area near the flume outlet shall be imported road mix gravel of the type and gradation used on County roads in the area. Fill for the washout shall be placed in lifts not exceeding 8" in loose thickness, and each lift compacted thoroughly before another lift is placed. Although no formal soil proctors or density testing is anticipated, the backfill for the bridge ramps and washout shall be moistened and compacted to a density of not less than 95% of the maximum obtained by AASHTO Method T-99A. Bridge ramps shall be shaped and graded to a finished width equal or greater than the bridge walkway with ramp grades of 15% or less.

2.04 GRAVEL FOR BRIDGE RAMPS

Bridge ramps shall receive a 3" layer of 3/8" pea gravel walking surface similar to the trail walkways at the picnic shelter. Material for this shall be acceptable to FWP and State Park representatives.

2.04 REFERENCE DRAWINGS

Drawings 1, 3, 4, and 5 of 5

End of Section

## SECTION 3 - SURVEYING

### 3.01 DESCRIPTION

This section of the Specifications covers the Contractor's requirement in providing surveying services and construction staking as necessary for constructing the new flume and pedestrian bridge.

### 3.02 GENERAL

ELEVATION DATUM - Sheet No. 3 of the plans shows a bench mark near the inlet of the flume with an assumed elevation of 100.00. All elevation references shown on the drawings for the flume are based on this assigned datum, and all elements of construction of the flume including bottom of flume grades are based on this datum. This datum shall be preserved by the Contractor. If the present bench mark (bolt in ground) is too close to the construction, a new bench mark shall be set with its elevation datum consistent with the bench mark shown on the plans (top of bolt elevation = 100.00).

### 3.03 SPECIFIC REQUIREMENTS

The new pedestrian bridge and new flume structure will be constructed within the present footprints of the existing structures that will be removed. After demolitions and removals are completed, the Contractor will be responsible to provide surveying services as necessary to place new foundations and other elements of the new construction to the alignments and grades called for on the project drawings. This will involve setting all centerline stakes and offsets necessary to construct the various elements of the project to the precise grades, dimensions, and geometric shapes shown on these drawings.

Surveying personnel must be experienced and competent to provide these services. This work may be done by an outside surveying service or by the Contractor's own personnel if properly trained and experienced to assure accuracy and the proper fit of all construction components.

### 3.04 FLUME BENT FOOTINGS

Footings for flume bents shall be accurately placed with bottom of footings dug to provide the minimum cover shown on the drawings. Top of footing elevations shall be determined using a building level or laser level and the wooden bents constructed accordingly to obtain the proper flow line grades shown on the drawings.

### 3.05 REFERENCE DRAWINGS

Sheet 1, 3, and 5 of 5

End of Section

SECION 4 - STRUCTURAL CONCRETE

4.01 DESCRIPTION

This section covers all poured-in-place and precast concrete work for the following parts of this project.

A. New pedestrian bridge footings.
B. Concrete foundations for the new flume structures.

4.02 GENERAL

Concrete proportioning, mixing, transporting, forming, placing, curing, and other construction methods shall conform to all applicable specifications contained in Section 03310 of the Montana Public Works Standard Specifications, current edition.

4.03 CONCRETE CLASSIFICATION AND SPECIFICATIONS

All poured-in-place concrete shall be Class M-4000. Concrete mixes and strengths shall meet the following requirements:

Minimum 7-day lab strength----------2,800 psi
Minimum 28-day lab strength ----------4,000 psi
Maximum aggregate size ----------3/4"
Maximum water to cement ratio----------6 gal./sack (.50 by weight)
Slump range----------1-1/2" to 4" maximum
Entrained air content----------4% to 7%

4.04 PRECAST CONCRETE OPTION

Concrete Wall Foundations for the bridge and flume structures may be of precast concrete lifted and set in place on a prepared level graded excavation to obtain the correct exact top of concrete elevations shown on the drawings. Lifting lugs may be added, but concrete mix and reinforcing shall be as shown on the drawings. If precast units are cracked or severely damaged in transit, they will be subject to rejection and replacement.

4.05 JOBSITE CONCRETE MIXING OPTION

Poured-In-Place Concrete for foundation units may be produced on jobsite using a small portable mixer. If this option is used, the mix shall be at least a six sack design and shall meet all requirements of 4.03. Aggregate requirements and concrete mix design shall be comparable to that for a commercial ready-mixed concrete and quality shall not be compromised.

4.06 CONCRETE FINISHES AND CURING

A. **Foundation Elements** - Float finish tops of concrete footings and concrete wall foundations.

4.07 CONCRETE SAMPLING AND TESTING

A. Concrete sampling and testing may be ordered at the Owner's discretion. If ordered, the actual sampling and testing will be done by an independent testing lab.

B. If sampling and testing is ordered by the Owner, the following applies:

1. One (1) sample per pour - test for slump and air content.
2. Make three (3) cylinders for lab compressive testing.
3. Break one (1) cylinder at 7 days.
4. Break two (2) cylinders at 28 days.
5. Send all test reports to Owner within 2 days.

C. Costs for Concrete Sampling and Testing - If this work is ordered by the Owner, the Owner will also be responsible to pay for all associated costs.

4.08 REFERENCE DRAWINGS

Drawings 1, 3, 4, and 5 of 5.

End of Section

## SECTION 5 - REINFORCING STEEL AND ANCHOR BOLTS

### 5.01 DESCRIPTION

This section covers furnishing and placing all concrete reinforcing steel of the quantity type, and size shown in the drawings and all requirements as specified herein. It also covers anchor bolts placed in the concrete foundations.

### 5.02 GENERAL

Materials and workmanship for furnishing and placing reinforcing steel shall meet all applicable requirements of Section 03210 of the Montana Public Works Specification, current edition.

### 5.03 MATERIALS

All material used in this work shall be new and shall meet the following requirements:

A **Reinforcing Steel** - Reinforcing steel shall be of the deformed type and shall meet the requirements of ASTM A-615, Grade 60 or Grade 40.

B. **Anchor Bolts - 36 KSI** Minimum yield point steel bolts. Use threaded rods where shown or noted on the drawings. Rods may have a plated metal finish.

### 5.04 INSTALLATION REQUIREMENTS

A. **Reinforcing Steel** - Reinforcing steel shall be accurately placed as detailed on the project drawings, bent and lapped as shown, and securely tied before concrete is poured. Masonry blocks and steel chairs shall be used if necessary to assure accurate placement and bars shall be wire-tied at all intersections and lapped bar locations.

B. **Threaded Rods** - Drill holes 1/8" larger than rods to depth shown. Blow holes clean and epoxy grout rods. Use a 2-part epoxy such as Fastenal Propoxy 300, or equal.

### 5.05 REFERENCE DRAWINGS

Drawings 1 & 2 of 2.

End of Section

## SECTION 6 - STRUCTURAL STEEL AND BOLTS

### 6.01 DESCRIPTION

This section of the specifications covers furnishing and installing structural steel and bolted connections as follows:

A. Shop fabricated steel stringers, steel cross beams and associated welded and bolted connections as shown on the drawings and/or specified herein.

The Contractor shall furnish and install all items of steel and metal work required for or incidental to completion of the work. The Contractor alone shall be responsible for all errors of fabrication and/or installation for the correct fitting of all items.

### 6.02 MATERIALS SPECIFICATIONS

Materials shall meet the following standards and specifications:

A. **Rolled Steel Shapes** - ASTM A-992 having a minimum Fy = 36 KSI.

B. **Bolts for Steel Connections** - Standard Hex Head Bolts - Minimum 36 KSI yield point strength. Furnish with lock washers and hex head nuts.

### 6.03 STANDARDS AND CODES

The following specifications and codes apply to materials, fabrication, and installation of steel and metals for this project.

A. ASTM Standards as applicable.

B. AISC Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings.

C. AWS Code for Welding in Building Construction.

### 6.04 FABRICATION AND INSTALLATION

Fabrication and installation work shall conform to all applicable requirements of the codes standards and specifications referred to in Article 6.04 of this Section and to the details and notes on the drawings. Work shall be true to detail with clean, straight, sharply defined lines. Metals shall have smooth finished surfaces where exposed. Weld joints of steel framing to make a strong, rigid assembly. Additional welding beyond that detailed on the drawings will be done if necessary to secure all components. Dress exposed faces of welds flush and smooth. All field welding shall be done by competent, qualified welders with proven experience in the trade.

6.05 SHOP PAINT

Apply **one (1) shop coat** of zinc oxide oil primer or other approved shop paint to structural steel and welded steel parts before delivery to job site. No shop paint shall be applied to areas to be field welded or encased in concrete. Remove all dirt, rust, mill scale and other substances before painting.

6.07 REFERENCE DRAWINGS

Sheets No. 1 & 2 of 5

End of Section

# SECTION 7 - WOOD PRODUCTS AND CONSTRUCTION

## 7.01 DESCRIPTION

This section of the Specifications covers furnishing and installing the following items for the project.

A. Structural framing lumber for pedestrian bridge and flume.
B. Decking lumber for bridge.
C. Decking lumber for flume inlet and outlet structures.
D. Connectors for carpentry items.

## 7.02 MATERIALS

Wood products for the above items shall conform to the following requirements contained in current West Coast Lumber Bureau (WCLB) standards or equivalent local building codes.

A. **Lumber Grades and Species** - Lumber shall conform to the following requirements for grade, species, and finish.

1. **Lumber for bridge and flume framing** - Douglas fir, rough cut to full dimensions shown on the drawings. Quality must meet WCLB requirements for No. 1 or better. Members in contact with soil or concrete - no sapwood or juvenile wood allowed. Other members - Maximum 1/2" sapwood.

2. **1" Rough lumber -** Rough cut Douglas fir sawed to full dimension. WCLB "construction" grade.

3. **Bridge railings** - Dressed commercial lumber surfaced four sides (S4S) in No. 1 or better Douglas fir.

4. **Decking for bridge and flume inlet and outlet floors and sides** - Dressed commercial lumber surfaced four sides (S4S) in **dried deck redwood.**

B. **General Requirements for Rough Cut Lumber** - Rough cut lumber for this project may be unseasoned lumber produced by a local sawmill and need not be grade stamped. However, if quality of any products is questionable, the herein specified grading rules may be applied and defective products will be rejected. Framing members not meeting the heartwood requirement may also be rejected.

7.03 STANDARDS

A. Lumber Grades shall comply with the current standard grading rules of the "West Coast Lumber Inspection Bureau" or Western Wood Products Association.

B. Preservative Treatment shall be in accordance with the requirements of AWPA Standard C1 and C2. Where treated lumber is noted on the drawings it shall be pressure treated with ammonium copper quat (ACQ) to a retention level of .40 pcf, minimum.

7.04 WORKMANSHIP

**General** - Carpentry shall be done in a professional method with all wood members properly cut and joined in the manner shown on the drawings. Lumber shall be furnished slightly over length to allow for field fitting and trimming. Walls shall be constructed to be plumb and true to the alignments and dimensions as planned.

**Fastenings** - Install metal fasteners of the type and at the locations shown on the drawings. Nailed and screwed connections shall be as detailed. Where fastenings are not specifically noted on the drawings, install fastenings consistent with normal methods and standards for the trade and meet minimum requirements contained in the International Building Code, current edition.

7.05 REFERENCE DRAWINGS

Sheet number 1, 2, 3, 4, and 5 of 5.

End of Section

SECTION 8 - SHEET METAL WORK

8.01 DESCRIPTION

This section covers all materials, fabrication and installation work shown on the drawings and specified herein to complete the flume construction including the flume trough and all associated flashings, sealants, and connections.

8.02 MATERIALS SPECIFICATIONS

A. **Sheet metal for flume trough sections and end flashings** - 16 gauge shop fabricated galvanized sheet metal meeting current commercial industry standards.

B. **Sheet metal for top flashings** - 22 gauge shop fabricated galvanized sheet metal meeting current industry standards.

C. **Steel rivets** - standard steel pop rivets of the size shown on the drawings and of proper length for sheet metal joints.

D. **Flat headed screws** - Nickel or zinc plated wood screws of the type and length shown on the drawings.

E. **Joint sealant** - POLYSEALSEAM All Purpose Adhesive Calk (Locktite Brand) as made by Henkel Corp., or approved equal.

8.03 STANDARDS

Meet all applicable ASTM and International Building Codes and commercial industry standards for sheet metal work.

8.04 FABRICATION AND INSTALLATION

Fabrication and installation work shall conform to all applicable requirements of the standards and specifications referred to in Article 8.03 of this Section and to the details and notes on the drawings. Work shall be true to detail with clean, straight, sharply defined lines. Metals shall have smooth finished surfaces where exposed. All joints shall be properly lapped and sealant applied before rivets or other fasteners are installed. The workmanship shall be done in a manner consistent with the highest standards of the trade. Any inferior work will be rejected.

8.05 REFERENCE DRAWINGS

Drawings 3, 4, and 5 of 5.

End of Section

## SECTION 9 - FINAL CLEANUP

### 9.01 DESCRIPTION

A. This work consists of final cleanup of the project site prior to final acceptance.

### 9.02 EXECUTION

CONTRATOR RESPONSIBILITIES

The contractor shall be responsible for final cleanup at the end of the project to a level satisfactory to the Owner. All construction debris, no matter how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Reseeding or other resurfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. All construction related temporary sediment control devices shall be removed as soon as practical.

### 9.03 PAYMENT

All final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made for final cleanup.

End of Section